INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT

VERIFYING SUPERPAVE GYRATORY MOLDS, TOP PLATES AND BASE PLATES ITM No. 913-08T

1.0 SCOPE

1.1 This test method provides instruction for verifying the critical dimensions of Superpave gyratory molds, top plates and base plates used in AASHTO T312.

1.2 This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and to determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 AASHTO Standards.

T 312 Preparing and Determining the Density of Hot-Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor

3.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications, Section 101.

4.0 SIGNIFICANCE AND USE. This ITM is used by laboratory personnel to verify the critical dimensions of Superpave gyratory molds, top plates, and base plates.

5.0 APPARATUS.

5.1 Calipers, readable to 0.01 mm

5.2 Ruler, readable to 1 mm

5.3 Bore Gauge, NIST traceable, readable to 0.001 mm

5.4 Plastic Blocks; one measuring 25 mm and two measuring 50 mm

5.5 Rigid Straightedge, 150 mm or greater

6.0 PROCEDURE.

6.1 Molds.

6.1.1 Measure the wall thickness of the mold to the nearest 0.01 mm using the calipers. Rotate the mold 180° and measure the wall thickness again. Record the minimum reading.

6.1.2 Place the bottom plate in the mold and measure the height of the mold to the nearest 1 mm using the ruler. Rotate the mold 180° and measure the height again. Record the minimum reading.

6.1.3 Set the datum point of the bore gauge using the calibration ring in accordance with the manufacturer instructions. The applied pressure to the ratchet and number of clicks on the ratchet to achieve a stabilized reading shall be noted. This same technique shall be used when measuring the mold at any point.

6.1.4 Remove the bottom plate and place the inverted mold (Note 1) on a flat surface. Place the 25 mm block in the center of the mold. Carefully insert the bore gauge to rest on the center of the 25 mm block. Tighten the gauge using the same technique used on the calibration ring. Measure and record the inside diameter of the mold to the nearest 0.01 mm. Slightly loosen the gauge and rotate the gauge 60° (half way to where the adjacent contact point rested). Measure and record the diameter. The average of these values shall be considered the diameter of the top of the mold.

Note 1: For gyratory compactors that have the piston descending from the top, the mold is not inverted.

6.1.5 Loosen and carefully remove the bore gauge from the mold. Remove the 25 mm block and insert a 50 mm block. Repeat the procedure for obtaining an average of two readings as described in 6.1.4. The average of these values shall be considered the diameter at the middle of the mold.

6.1.6 Loosen and carefully remove the bore gauge from the mold. Place the second 50 mm block on top of the other 50 mm block. Repeat the procedure for obtaining an average of two readings as described in section 6.1.4. The average of these values shall be considered the diameter at the bottom of the mold.

6.2 Top Plates.

6.2.1 Place the straightedge firmly on the top plate and slide the straightedge across the surface. The straightedge shall slide smoothly without catching any raised edges.

6.2.2 Measure and record the top plate diameter to the nearest 0.01 mm using the calipers. Rotate the top plate 45° and measure the diameter. Obtain four measurements in this manner and record the average.

6.3 Base Plates.

6.3.1 Place the straightedge firmly on the base plate and slide the straightedge across the surface. The straightedge shall slide smoothly without catching any raised edges.

6.3.2 Measure and record the base plate diameter to the nearest 0.01 mm using the calipers. Rotate the base plate 45° and measure the diameter. Obtain four measurements in this manner and record the average.

7.0 TOLERANCES.

7.1 The tolerance for the molds shall be as follows:

Mold Dimensions	Tolerance
Wall Thickness	7.5 mm minimum
Height	250 mm minimum
Inside Diameter	149.90 mm – 150.00 mm

7.2 The tolerance for the top plates shall be 149.50 mm – 149.75 mm

7.3 The tolerance for the base plates shall be 149.50 mm – 149.75 mm.

8.0 REPORT. The dimensions for the molds, top plates, and base plates shall be reported on the form in Appendix A.

SUPERPAVE GYRATORY MOLD, TOP PLATE AND BASE PLATE VERIFICATIONS

Manufacturer: _____

Calipers used: _____ Bore Gauge used: _____

Mold ID	Wall Thickness	Height	Top (25mm block)			Middle (50mm block)			Bottom (both 50mm blocks)		
			1	2	Avg	1	2	Avg	1	2	Avg

Top Plate ID	Burr Free Y/N	Diameter					Base Plate ID	Burr Free Y/N	Diameter				
		1	2	3	4	Avg			1	2	3	4	Avg

Remarks: _____
_____

Verified by: _____ Date: _____

Previous Date Done: _____ Next Date Due: _____